

ST. BARTHOLOMEW'S HOSPITAL JOURNAL



VOL LIX

DECEMBER 1955

No 12

ST. BARTHOLOMEW'S HOSPITAL JOURNAL

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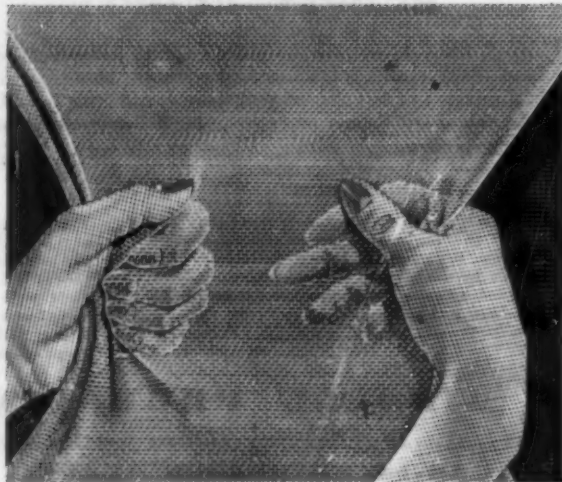
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ST. BARTHOLOMEW'S HOSPITAL JOURNAL

Vol. LIX

DECEMBER 1955

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EDITORIAL

THE YEAR of the Accelerator or, when that is forgotten, the year in which the Hospital crossed Little Britain. These are the tags likely to be fastened to 1955 by future generations. Retrospection is pandemic at the close of the year and we make no excuse for setting down, in no particular order, some of the year's ephemeral happenings, on most of which we have already commented.

Changes in the senior Staff have been few. Professor Christie left us to take up an appointment at McGill University, Dr. Scowen replacing him as Director of the Medical Unit. Dr. Bodley Scott is now the head of a Firm and Mr. G. W. Taylor is the Assistant Surgeon on the Unit. Dr. G. J. Cunningham moved to the Royal College of Surgeons where he is Professor of Pathology. On the nursing side, our Assistant Matron since 1939, Mrs. J. Thacker, and Miss Jupe (Sister Harvey), for many years Senior Sister, have both retired. Honours and honorary degrees are too numerous to record in detail. Lord Adrian, who was re-elected P.R.S., received his Barony, and Sir Wilfred Le Gros Clark and Sir Geoffrey Keynes, their Knight-hoods.

Lord Horder's death in August was a severe blow and his absence is, and will be, keenly felt. Another consulting physician, Dr. H. G. Adamson, the dermatologist, died in the same month. As we go to Press we learn of the death of Mr. Thomas Hayes, a former Clerk to the Governors, who retired shortly before the war.

The year 1955 has seen steady progress made on the new Physiology and Biochemistry Laboratories at Charterhouse, and the day cannot be far off when the old College Hall will be demolished. At the Hospital, a new children's ward, Kenton, has been opened. The Refectory has been pleasantly redesigned and renovation has started on the Clerk's house, which was gutted during the war. Some further work has been carried out

in the neighbourhood of the Slope; but the fibre-board partitions separating the lecture theatre from the carpenters' shop remain. There is a photograph of the Little Britain site on the following page.

View Day proceeded without a hitch, the high-lights being the newly christened Linear Accelerator at Charterhouse and the charming murals in the anaesthetic room of the new Gynae Theatre. The other events of the year, Sports Day, The Art Exhibition, Play and Pot-pourri were all uniformly successful and have been, or will be, described in the *Journal*. In sport we still do not do as well as we should. Our only major victories were won by the Sailing and Women's Hockey Clubs.

According to our records, Bart's men have published over 350 papers, articles and books during the year. The most prolific author is Dr. W. R. Bett, who specializes in medical history, while Dr. F. Parkes Weber wins the prize for the paper with the most interesting title: *Can acquired camptodactylia (Landonzy) be explained as a manifestation of an inborn lipoid storage abnormality of metabolism?* We now know how Dr. Bodley Scott spends his spare time, for he has written a masterly paper on *The Doctor in Contemporary Literature* (*Lancet*, Aug. 13, p. 341). It is very amusing and thoroughly recommended. We cannot resist making one quotation: "... the night sister at St. Bartholomew's was behind a screen with a recently admitted casualty and the waiting detective heard the sound of a kiss, followed by a whisper of "now rest and get well for me, soon-soon"'. If you wish to know the context, you must read the article. Mr. Kenneth Walker continues to extend a helping hand to the readers of *Picture Post*, and Dr. Richard Gordon, our professional humorist, and an ex-editor of this *Journal* incidentally, has published two more best sellers and written for *Punch*.

Travelling abroad has been popular this year and members of the Staff have between them visited most parts of the world. The largest contingent went to Canada, in order to attend the combined meeting of the British and Canadian Medical Associations at Toronto.

Four editorials ago we talked about some members of the Hospital who had made the Headlines. Since then we have been doing rather well on radio and television. Dr. A. J. Marshall, our Reader in Zoology, introduced a series of three programmes on the natives of central New Guinea. Drs. Lawther and Waller, who are leading experts on smog, gave a broadcast interview in which they explained the principle behind the mysterious bottles they have been supplying to outpatients. And an eminent psychiatrist lent respectability to a TV show on Hypnotism. We withhold his name in order not to compromise him with the Central Ethical Committee, but we can tell you that he wears a

monocle.

The record of Professor Rotblat, however, is so impressive that it deserves a separate paragraph. His mention in 'Beachcomber' made him distinctly one up, while a talk after the 9 o'clock news made his position virtually unassailable. To cap this he was one of the seven famous scientists to sign the nuclear declaration sponsored by Earl Russell and the late Professor Einstein. But he excelled himself at the Geneva Atoms for Peace conference where he compered three television broadcasts. His skill and charm in conducting interviews make him a serious rival to Richard Dimbleby and Wilfred Pickles. The *pièce de résistance* came in the last programme in which he demonstrated that Isotopes are Good for You by calmly quaffing a wineglass full of radio-active iodine and holding a Geiger-counter to his neck. In the not too distant future the Professor will need a Press agent to handle his publicity.

East Anglian Rahere Society

The East Anglian Rahere Society held a Dinner at the Royal Norfolk and Suffolk Yacht Club, Lowestoft, on the 29th October. The Chair was taken by Dr. H. R. Rogerson and Dr. Edward Cullinan was guest of honour; some twenty members were present. The health of the Hospital, coupled with the name of Dr. Cullinan, was proposed by Dr. George Day of Mundesley. Dr. Cullinan in his reply gave us some recent news of the Hospital and it was revealed that both speakers had, at one time, shared digs. Their comments upon each others behaviour provoked much mirth among the already convivial company. Although the number present was smaller than of recent years, an enjoyable evening was had by all those present.

This Dinner has become an annual function and will be held next year at Colchester. It would be helpful if anybody living in Norfolk, Suffolk or Essex who is interested, would send their address to Dr. Wilfred Knight, 10 Fonnereau Road, Ipswich, or to Mr. A. P. Bentall, 69 Newmarket Road, Norwich, if they have not already done so.

The Journal Staff wish all their readers, at home and abroad, a prosperous New Year.

* * *

Club Days

Few of the Hospital's seventeen sports clubs have contrived to give a particular sporting event the panache of a social occasion. Sports Day is of course the best known and closely rivalling it in popularity is the Rugby Club's seven-a-side tournament. More recently the oarsmen and hockey players have joined the ranks of those who believe there is more in sport than mere exercise.

Some club functions proceed with silent and uncanny efficiency, rather in the manner of a Rolls Royce; while others are like an excursion in some Genevieve, progressing inevitably from crisis to chaos.

In the latter class falls the Boat Club's own regatta, held for the second time with St. Thomas' at the London Rowing Club. This year it was the turn of Bart's to organize the events and whereas on the previous occasion it was a shambles and not finished, this year the programme was completed. A



Dept. of Medical Photography 8828

The foundations of the new Hospital building as seen from the Children's Department. The tower and cloisters of St. Bartholomew-the-Great are in the left background. The fence at the bottom of the photograph borders Little Britain.

date had been carefully chosen with low water in the afternoon ; but somehow last year's tide table was used and nobody was really surprised when the spring high tide flooded the embankment and had the river in turmoil. Small wonder then that odd things happened : two eights rowed from opposite ends of the course, each believing their opponents had scratched, and more than one oarsman discovered that he was expected to race against himself. At the end of the regatta Mrs. Hadfield presented the cups and medals, very nobly filling the sculling cups of both Hospitals with champagne before parting with them.

The Hockey Club possibly went too far in having a social occasion with no hockey ; but as they invited a representative of the *Journal* to their cocktail party (other clubs please note), we can hardly say that it was anything less than a success. Among the guests were Sir James and Lady Ross, Professor Wormall, Dr. Ellis and an ex-Vice-President of the Club, Professor George Cunningham.

Certificate or Certification ?

A General Practitioner in Kent has forwarded this dramatic letter :

Dear Sir,

So sorry to trouble you. Would you please Sir, Grant me a Certificate for the Council for a new House. Last Monday, Mr. Smith's Men Started pulling down the Houses, opposite me. That Huge Chimney fell, and terrified me, and Choked me with dust all over my Bed, it's filthy. The Bricks crashed down my Chimney and smothered me and all the Furniture. I have been Ill ever since with the Colic, I have to go to the Lav nearly every ten minutes my Headache's awful, please Sir, may I have a Bottle of Medicine, and a little Ointment, please Sir, Don't come near the House or the Bricks will fall on your Head. This House is unfit for Human Habitation, Thanking you,

yours Sincerely,
_____ (Mr.)

NOTICES

Journal Staff

The Publication Committee of the JOURNAL invite applications for the posts of Assistant Editor and Assistant Manager, which become vacant at the beginning of January. Those interested in a journalistic career (the Manager has an expense account) should write to the Editor as soon as possible. Previous experience, though desirable, is not essential.

* * *

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Catholic Society

LECTURES ON MEDICAL ETHICS

A series of lectures covering various aspects of medical ethics will be held on Mondays at Bourne House, 13, Devonshire Place, W.1, at 6.15 p.m., commencing on January 9. The speakers will be a moral theologian, consultants and a hospital chaplain.

* * *

Bart's Rugby Club Tie

The Committee of the Students Union have approved the application of the Rugby Club for a Club tie. The tie has a maroon background on which are Bart's crests with the letters XV in gold underneath.

The tie will be awarded to members of the Club, both past and present, who have represented any Hospital XV in twenty or more matches.

The tie will be available early in the new year and will cost 12s. 6d. (13s. post free). Applications from old Bart's men together

with some indication of their past playing record and a cheque payable to the St. Bartholomew's Hospital R.U.F.C., should be sent to the Hon. Secretary, Bart's R.U.F.C., the Abernethian Room, St. Bartholomew's Hospital.

* * *

Oxford-Bart's Club

The Club's Winter Dinner will be held at the Royal College of Surgeons on February 7. Anyone who is eligible for membership, but has not received an invitation, is requested to write to the Hon. Secretary, the Oxford-Bart's Club, the Abernethian Room, St. Bartholomew's Hospital.

HOSPITAL APPOINTMENTS

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Chief Assistant (from 14.11.55)

Dr. R. R. de Mowbray (vice Jenkins).

Junior Registrar (from 1.11.55)

Dr. G. W. H. Havard (vice Reiss).

Dr. Bodley Scott's Firm

Junior Registrar (from 1.11.55)

Dr. M. J. Linnett (vice Munro-Faure).

Surgical Professorial Unit

Chief Assistant (from 1.11.55)

Mr. M. A. Birnstingl.

Mr. Hume's Firm

Chief Assistant (from 1.10.55)

Mr. R. B. McGrigor.

Thoracic Department (Hill End)

Senior Registrar (from 1.11.55)

Mr. J. G. Callanan (vice Paneth).

Radiotherapy Department

Senior Registrar (from 1.10.55)

Mr. R. J. M. Whittle (vice Shulman).

Registrar (from 1.10.55)

Mr. H. Horwitz (vice Whittle).

Senior House Officer

Mr. J. R. Johnson (vice Horwitz).

LETTERS TO THE EDITOR

TUBERCULOSIS APPEAL

*To the Chairman, Tuberculosis Appeal
Sub-Committee*

Dear Mr. Dawrant,—I would like, on behalf of the British Students Tuberculosis Foundation, to express the very warm thanks and appreciation of the Foundation to the Bart's Students Union and to the College Council for their very generous gift to the Foundation, and to congratulate all concerned on the very successful result of the appeal. It is very encouraging to receive this large-hearted help, and we appreciate very much both the energy and goodwill, from the students past and present, that went into organising the appeal, and also the very practical expression of sympathetic support by the Council.

Your supporters will be glad to know that, in addition to the Pinewood Unit for men, the unit for women students, at all stages of treatment, recently opened at High Wood, Brentwood, under the supervision of Dr. F. J. Bentley, M.D., F.R.C.P., is now fully occupied and is providing tuition facilities for women students undergoing treatment and convalescence.

Our Committee has noted with interest that you hope to be able to send further contributions in future years. May we send you our warm thanks for this intention in advance, and our very best wishes to all who have contributed.

Yours sincerely,

RONALD J. STILL,
(Hon. Treasurer).

59 Gloucester Place,
Portman Square, W.1.

SIR ANTHONY BOWLBY

Sir,—Mr. Reginald Vick's address to the Osler Club of London reminds me of an incident which well illustrates Sir Anthony Bowlby's lovable personality. I was one of his dressers in 1904 when the grandeur of the period was still at Bart's. Sir Anthony came to the Hospital in a landau, drawn by a fine pair of horses. Several other senior members of the staff had similar carriages, whilst some of the juniors had broughams.

Whilst home in the Rhondda Valley I was asked by an elderly collier if it was possible for me to arrange for his admission to Bart's. He had been waiting for a considerable time for a hernia operation at the Cardiff Hospital. I was astonished, as that was a time of very low wages and large families in the South Wales coalfield. However, he told me that his friends would provide the train fare. I asked my H.S., who referred me to Sir Anthony, who readily agreed, saying that he would be pleased to meet a Welsh collier. The

manager of the colliery had wisely removed him from the coalface to the stables, for he came originally from a farm in West Wales, and he was now in charge of a number of pit ponies.

On admission Sir Anthony gave him a special welcome and later was much interested in the patient's account of his old work of coal-cutter and of his care of the ponies, and told him that he had a pair of good horses which he should see before leaving the Hospital. Sir Anthony asked me to remind him, and shortly before his discharge the patient was walking round the Square with others when Sir Anthony arrived. I had warned him to be near when the carriage stopped and, to the astonishment of a large group of students, we see Sir Anthony and the old collier, who had removed his cap, walking round admiring the magnificent pair of bays. On return home he told his friends of "the wonderful kindness of a great London surgeon" and that I had chosen "the right place to learn to be a doctor".

Yours very truly,

IVOR J. DAVIES.

Aberystwyth

THE OLD GUARD COUNTER-
ATTACKS STUDENT APATHY

Sir,—Your editorial in the October issue of the *Journal* calls for some comment. The provocative tone is unfortunate, to say the least, and I feel it displays a certain ignorance of the facts. While it cannot reasonably be denied that the Abernethian Society is no longer the eminent body it was in former times, it is disingenuous in the extreme to imply that this is the result of mismanagement by successive committees. When faced with apathy and general disinterestedness among a large proportion of the students, as has been the case in recent years, any committee is severely handicapped, however vigorous and active it may be. The editorial spectre of nepotism amongst a handful of self-seeking Oxonians is a shibboleth, and indeed has a certain air of pettiness about it.

Your editorial raises many points for discussion, too numerous to be dwelt on here. However, I would have thought that a very good case could have been made out for having occasional lectures that bear "no relation whatsoever to medical science and practice," pace the laws of the society.

Furthermore, it seems hardly relevant to compare the Abernethian Society to the Junior Osler Society, which is a small Society with a very limited membership, devoted solely to the historical aspects of medicine.

The lack of active student participation to which you refer in your editorial is not confined to the Abernethian Society, nor is it the fault of a few

individuals, sincerely trying to do their best to arouse interest in the Society. I doubt if the situation has changed in the short time since I was a student, and I would suggest that the basic fault is still the widespread lack of enthusiasm for any extra-curricular activities. Too many students are simply not interested in anything outside ward rounds and formal lectures. This is no new phenomenon, and I do not pretend to know the answer to the problem. It will certainly not be solved by editorial diatribes against those who are trying to remedy the situation.

Yours, etc.,

DUNCAN THOMAS.

Residential Staff Quarters,
St. Bartholomew's Hospital.

THE COMMITTEE VINDICATED

Sir,—From October, 1953, until September, 1955, the activities of the Abernethian Society have been as follows:—

Lectures on Medical Subjects	14
Lectures on Non-Medical Subjects	8
Clinical Evenings	3
Debates	2
Meetings at which Students read Papers	2
Visits	6

In addition there were a series of Discussions on Religion and Medicine, and a film show.

In the Summer of 1953 the Committee of the Abernethian Society held a series of Committee Meetings at which the Old Law, quoted in the October Editorial, was discussed. It was decided to extend the activities of the Society beyond the Old Law, and to hold Non-Medical Meetings. This decision was taken because the Committee felt that the activities of the Society should not be confined to the small group of students who would be interested in the purely Medical Meetings; provided by the Old Law. The Committee felt there was a demand for something more and that they could serve the Society best if they extended the activities so that Students had the opportunity to hear and to meet great men from all walks of life. The record shows that they did not forget the main object of the Society as laid down in the Old Law. The Minutes of these Committee Meetings are recorded in the Minute Book.

If the Editor of the *Journal* considers that the Committee of the Abernethian Society has failed in its task and was not justified in extending the Society's activities, then it is his duty to call an Extraordinary General Meeting of the Society to discuss the Committee's Policy.

The Committee of the Abernethian Society looks to the *Journal* for support and encouragement; for several months it has received nothing but misinformed criticism, it is doubtful whether this is in the best tradition of the *Journal*.

Yours, etc.

JOHN MILLARD.

Hon. Secretary, Abernethian Society,
1953-54.

College Hall,
Charterhouse.

TRADITIONS OVERBOARD

Sir,—I should like to discuss in your columns some points arising from your *tour de force* against the Abernethian Society in the October *Journal*.

The lack of original work presented before the Society by students arises rather from the conditions of medical education today than the nature of the Society itself. During the lifetime of the Abernethian Society the corpus of recognised knowledge has increased enormously. The study of this knowledge must necessarily occupy more of the student's intellectual life than in previous generations. It is therefore not surprising that his favoured extra-curricular interests should be sport, entertainment and general culture rather than the writing of papers and the presentation of cases.

In addition, even in Paget's time discoveries by students were rare, and now that research involves complicated techniques they must be more uncommon still. Papers read by students must usually be reviews or the presentation of cases, and in neither of these can the student speak with sufficient authority to lead to valuable formal discussion.

While emphasising the general limitations of paper reading by students I am sure there is still scope for a few each year, particularly if they deal with medical history. At the same time the value of hearing great men on their subjects should not be underestimated, even if it is passive. Admittedly not all the Society's past speakers have been great men, but great men have not always commanded the audience from the Society they deserve.

The Abernethian Society should serve the present day intellectual aspirations of its members rather than its own traditions.

I am Sir,

Yours faithfully,

C. B. S. WOOD.

The Abernethian Room.

• • •

Our Columnist writes :

The Editor has kindly invited me to comment very briefly on these letters. Dr. Duncan Thomas raises the cry of apathy. Neither the Editor nor myself believe in student apathy; we do believe, however, in *chacun à son goût* (see this *Journal*, Nov., p.350). In any case the attendance at the Society's meetings is remarkably large, averaging over 70 (the number of students is under 500). Mr. Millard makes much of the 'Old Law'. As far as I can ascertain from the minute book, it is still the law. He is also mistaken in thinking his committee introduced non-medical topics into the curriculum. This was done before he was born. His suggestion apropos an Extraordinary General Meeting is interesting, unfortunately the Editor cannot accept as he is not an official member of the Society (see law 3), nor, for that matter are the members of the present Committee. This is a trivial point, but it does indicate a lack of interest, as did the unconstitutional summer elections. Mr. Wood answers the criticism, though his reasoning would not, I think, have endeared him to Dr. Gee.

ELECTROMYOGRAPHY

by K. M. BACKHOUSE

MUSCLES contract when subjected to an electrical stimulus, a fact known since Galvani's classical experiments in 1796. Although Galvani himself believed that his experiments demonstrated the liberation of 'animal electricity' by the muscles, his views were generally dismissed. That electrical charges are produced on muscular contraction was suggested by Matteucci (1842) and by du Bois-Reymond (1848) but their observations also received scant credence. Hermann (1879), therefore, can be cited as the first to demonstrate these potential changes convincingly, in eliciting measurable diphasic currents from the forearm following electrical stimulation of the upper arm nerves. Some years later Wedenski (1885) heard the effects of these potential changes in the contracting biceps brachii muscle, having inserted two electrodes into the muscle and coupled them to a telephone ear-piece.

Not until the invention, first of Lipmann's capillary electrometer (1875) and later of Einthoven's string galvanometer (1906) did instruments capable of following rapid changes in potential become available. Using these instruments, limited as they were in scope, Piper (1912), and later a Bart's man, Dr. E. D. Adrian (now Lord Adrian, P.R.S., O.M.), and his co-workers (1929), studied the action potentials produced by contracting muscles, and their pioneer work forms much of the experimental basis of electromyography.

Some 20 years ago, Dr. Denny-Brown, while still at Bart's, experimented with the possibilities of clinical electromyography; but it was not until the 1939-45 war and its associated advances in the use of valve amplifiers, that another Bart's man, Dr. Graham Weddell, and his collaborators Feinstein and Pattle (1944) working in the Anatomy School at Oxford, laid the foundations of clinical electromyography.

The modern electromyograph consists essentially of the sampling electrodes and a high gain valve amplification system feeding into a cathode ray oscilloscope, or a loud-speaker, or both. The electromyograph designed by

Multitone Ltd. for St. Bartholomew's Hospital is such an instrument, having, however, a number of additional features intended to assist the diagnostician in his work (Fig. 1).

THE ANATOMICAL AND PHYSIOLOGICAL BASIS OF ELECTROMYOGRAPHY

Muscle fibres consist essentially of the sarcoplasm, which embodies a variable number of myofibrils (the contractile elements of the muscle), surrounded by a thin limiting membrane, the sarcolemma. As in the case of nerve fibre, this limiting membrane separates the interior of the muscle, which is maintained in a state of electrical negativity, from the positively charged exterior. The ionic balance around the sarcolemma is said to be maintained by an excess of potassium ions within the cell and a constant active transportation of sodium ions out of the cell. The result of this ionic



Fig. 1. The electromyograph (see footnotes).

balance is that although in the relaxed muscle a potential difference exists between the interior and the exterior of the individual muscle fibre, no potential difference exists between different points on the surface of the fibres, all points possessing a positive charge (relative to the inside of the cell). If, therefore, two electrodes are placed in the substance of a relaxed muscle mass (i.e. the electrodes are lying between the muscle fibres and therefore related to the surface only of the fibres) no potential difference exists between these electrodes, and consequently, no passage of current will be registered by a galvanometer placed between the electrodes, or by movement of the light spot on the screen of the cathode ray oscilloscope of an electromyograph.

When a muscle fibre is stimulated, a small quantity of acetyl-choline is liberated at the motor end-plate, and this substance produces a local, transient increase in the permeability of the limiting membrane of the muscle; the ionic balance is thereby broken down and ionic transference takes place across the membrane, giving rise to a potential change, the 'end-plate potential.' This process leads to an increase in the permeability of the surrounding membrane, which becomes depolarized; an excitation wave is thus generated along the length of the muscle fibre which initiates contraction of the myofibrils, and is associated with potential change on the muscle surface, the 'muscle action potential.' The increased permeability of the surface membrane at the point of passage of the excitation wave leads to a free movement of ions across the membrane, the outside of which becomes negative relative to the surrounding polarized area. If two electrodes are placed on the surface of this

fibre, as the excitation wave passes the first electrode, current will pass from the positively charged second electrode to the negatively charged first, which current can be measured on a galvanometer, or on the cathode ray oscilloscope of an electromyograph. After the passage of the wave, the area in contact with the first electrode will become polarized again, and so positively charged; but as the wave reaches the second electrode this will in turn become negatively charged and current will pass in the reverse direction, i.e. from the first electrode to the second. The electrical changes which will be recorded in such a passage of the excitation wave and the consequent muscular contraction will lead to a deflection in the recording instrument first in one direction and then in the other, producing the typical diphasic wave form shown in figure 2. The normal time taken for such activity in a single muscle fibre is in the region of 1 millisecond and the amplitude is about 100 microvolts.

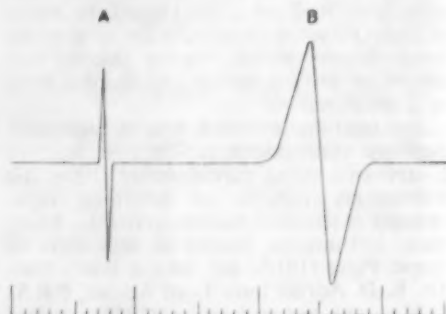


Fig. 2. Diagrams of the action potentials from (A) a single muscle fibre, (B) a motor unit. (Time scale: Small divisions = milliseconds).

Such is the picture seen under laboratory conditions when single muscle fibres are examined; but in the intact animal, muscle action is associated not with single fibre

The instrument is a double channel unit, having two head amplifiers with balanced input for two sets of electrodes. The amplifiers feed into a further main amplifier for audible indication of electrical activity, and into a Cossor Double Beam Cathode Ray Tube for visual indication of activity. The main amplifiers have filaments of their early stages supplied by high frequency current to prevent the possibility of hum pick up. They each have a coarse and fine gain control and the sensitivity is such as to give about 1 cm. deflection for 30 microvolts, and the noise level is of the order of 3 microvolts r.m.s. A meter is provided which gives an indication of the power output. Provision is also made for stimulation of the muscle being examined, by a built-in Stimulator, intended to give low voltage shocks via the coaxial needle, to indicate the exact location of the motor

point. A system is provided where transient phenomena will trigger off the sweep of the oscilloscope so that these phenomena may be readily detected if they exceed a certain predetermined level (Event Trigger Switch). A balance control on each amplifier is available for use with surface contact electrodes and to balance out any hum picked up on the electrode leads. A camera unit is also provided with a separate oscilloscope with a photographic blue trace. The time-base of this oscilloscope is triggered as required by the time-base of the main unit. (Photo: Multitone Ltd.)

activity, but with motor unit activity. Each motor unit consists of anything up to 300 fibres (in a coarse muscle), contracting synchronously throughout the muscle. The clear-cut diphasic wave seen when two elec-

normal somatic muscle produces a rough potential rhythm with a frequency of about 50 per second (Piper). Voluntary movement, then, produces on the cathode ray oscilloscope, after amplification of the potentials, a

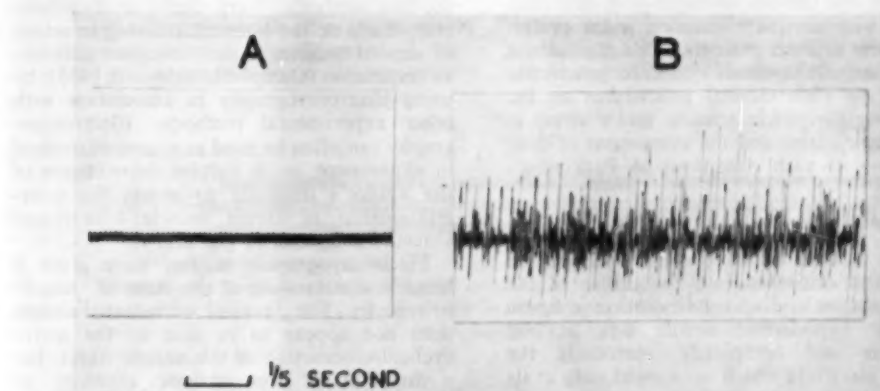


Fig. 3. Photographic records of electromyographic tracings showing (A) the 'electrically silent' picture of relaxed muscle and (B) the 'interference pattern' of fully active muscle.

trodes are placed carefully on the surface of a single fibre can hardly therefore be expected when the electrodes are placed, of necessity, rather haphazardly in the surface of the intact muscle. Nevertheless, the normal electrical activity of all the fibres of a motor unit summates smoothly to give a monophasic, diphasic or triphasic wave of up to one millivolt amplitude and between 5 and 10 milliseconds duration (Weddell, Feinstein and Pattle, 1944): the diphasic wave form is that most commonly seen. Occasionally polyphasic motor unit potentials are seen in normal muscle and the facial muscles may shew quite a high proportion of such potentials (Petersen and Kugelberg, 1949). The actual amplitude and duration of the potentials recorded naturally depends to a considerable extent upon the position of the electrodes in relation to the fibres and upon the type of electrodes used.

Voluntary muscular movement is associated with the asynchronous discharge of numerous motor units; furthermore, each motor unit has its own individual firing frequency, so that a simple firing rhythm is not maintained among all the motor units in a muscle. However, maximal exertion in

series of predominantly diphasic waves of varying amplitude and frequency, dependent upon the number of motor units contracting within the range of the electrodes: weak motor unit activity produces a picture of scattered potentials, which increases in complexity until, on full activity, the screen becomes filled with a continuous but variable wave pattern, the so-called normal 'interference pattern' of electromyography (Fig. 3). When examined by loudspeaker, each individual motor unit gives a characteristic 'popping' noise, while the normal interference pattern gives a low-pitched rumble.

Two types of electrodes are in general use for electromyography in this country, namely, surface (or skin), and concentric (coaxial) needle, electrodes. Surface electrodes receive, on the skin surface, potential changes originating in the underlying muscles. When it is realised that the electrical resistance of the skin may be well above 100,000 ohms, and may vary by as great a figure, precise localization of potential changes can hardly be expected. At the best, therefore, surface electrodes can do no more than register activity somewhere in the underlying muscle mass; the potential changes received may be

from muscle groups rather than from individual muscles. For diagnostic purposes this impossibility of precise localization, and the loss of some low amplitude and high frequency potential changes, limits the clinical use of surface electrodes. They are sometimes used for children or nervous patients, but the employment of needle electrodes with adequate sedation is far preferable even in such patients. The clinical use of surface electrodes is therefore practically limited to such clinical procedures as the recording of muscle tension under stress in psychiatric cases, and the assessment of drug efficiency in such conditions as Parkinson's disease.

The type of needle electrodes most commonly used are essentially hypodermic needles with an insulated copper wire passed down and cemented into the centre of the hub as shewn in diagrammatic section in figure 4. The hypodermic needle acts as one electrode and completely surrounds the second electrode which is exposed only at its point. The tip of this 'concentric needle electrode' is inserted into the muscle to be examined and the potential differences are measured between the two electrodes. All other factors being equal, the range of pick-up of potential changes by the electrodes will depend upon the distance apart of the two electrodes. The distance between the two electrodes can be reduced to a very small interval by using a small size hypodermic needle; the volume of muscle whose action potentials are to be sampled is therefore correspondingly small. Using size 20 hypodermic needles with core electrodes of 40 S.W.G. insulated copper wire, the author examined the action potentials in the second lumbrical muscle of the hand with no interference from the action potentials of the fully active, and immediately subjacent, adductor pollicis muscle (Backhouse and Catton, 1954).

ELECTROMYOGRAPHY IN EXPERIMENTATION

Electromyography provides an extremely useful research tool for anatomists and physiologists in their investigations of the actions of muscles, enabling them to augment or to clarify certain of the traditional statements concerning muscle function which abound in the text-books. In a study of the functions of the lumbrical muscles, Backhouse and Catton (1954) used both

electromyography and direct muscle stimulation by needle electrodes: by using the core electrode of the electromyography needle for stimulation, (the other electrode being a large surface plate) careful placement of the stimulating needle was possible, as was direct comparison of the observations from the two methods. Very useful studies have been made on the inter-relationship in action of various muscles in such complex activities as respiration (Campbell, 1954 and 1955), by using electromyography in association with other experimental methods. Electromyography can often be used as a control method in experiment, as in current experiments of the author's designed to assess the inter-relationship of direct muscle action and kinesthetic control in posture.

Electromyographic studies have given a better understanding of the state of 'tonus' in muscle. The 'tonus' of relaxed muscle does not appear to be due to the active cyclical contraction of the muscle fibres, but a function of the intrinsic elasticity of muscular tissue. The physiological hypertrophy seen following athletic training is associated with increase in the number of myofibrils in each muscle fibre, which increases the firmness in consistency of the muscle, but in no way affects the electrical picture shewn on electromyography; it is in fact the opposite of the flaccidity of disused or atrophic muscle, where there is a reduction in the number of myofibrils in each muscle fibre.

ELECTROMYOGRAPHY IN CLINICAL WORK

Neuropathies

Peripheral nerve injury provides perhaps the most fruitful field for clinical electromyography, facilitating the assessment of both the degree of denervation and the early signs of recovery. If a nerve suffers Wallerian degeneration and degeneration of the motor end-plate, then the muscle supplied loses its power of contraction and atrophies, becoming initially 'electrically silent.' Consequent upon nerve degeneration, the muscle becomes less responsive to Faradic stimulation. Galvanic stimulation produces responses at lower amperage and a parallel change occurs in the Intensity-Duration Curve. These changes take about 2-3 weeks for their completion, and about the same time after

injury, the affected muscle fibres develop a spontaneous rapid contraction known as 'fibrillation.' Fibrillation occurs as the result of degeneration of the motor end-plate and consequent hypersensitivity of the muscle fibres to circulating acetyl-choline. Electromyography shews fibrillation potentials as characteristic high frequency, small amplitude, single fibre potentials of no more than 1 millisecond duration (Fig. 5) and the loud-speaker gives a characteristic ticking noise.



Fig. 4. Diagrammatic section of a concentric needle electrode (foreshortened). The cylindrical needle electrode is in black, the core electrode in fine stipple, and the insulating cement and butt in broken lines.

In neuropraxis, Wallerian degeneration does not occur, and hence fibrillation is not observed even though there be atrophy of the muscle from lack of nervous stimulation. If fibrillation is present, then Wallerian degeneration must have occurred in some fibres, even though other normally contracting fibres are still present; if fibrillation is not observed 3-4 weeks after injury in an electrically 'silent' muscle, then neuropraxis and not neurotmesis is the probable diagnosis.

The earliest sign of recovery is seen as a characteristic electromyographic picture, which appears before any movement can be detected or any change in response to stimulation elicited. The recovery potential is a highly polyphasic potential of some 15 milliseconds duration, easily distinguishable from the electrical activity of fibres which have escaped damage. These recovery potentials, produced by the initial lack of summation of electrical activity in the many fibres of the motor unit, are at first minute.

The picture seen in peripheral nerve injury is simply one of injury to the motor nerve: whether injury affects the anterior horn cell, the anterior nerve root or the peripheral nerve, similar results ensue. Complete damage to the nerve cell, or fibre, resulting in Wallerian degeneration leads to fibrillation in muscle fibres supplied by that nerve (neurotmesis). Damage to the nerve, which

blocks impulses but does not produce Wallerian degeneration (neuropraxis), leads to electrically silent muscle fibres. Recovery of a nerve fibre damaged by any cause is manifest by early polyphasic recovery potentials. The electromyograph can therefore afford valuable information in disease and injury of the peripheral nerves.

Myopathic lesions. A number of diseases of the spinal cord directly affect the anterior

horn cells: poliomyelitis, peroneal muscular atrophy, progressive muscular atrophy and infantile spinal muscular atrophy being the most important. Sometimes intramedullary tumours and syringomyelia affect the anterior horn cells indirectly. In these diseases, electromyography can often be of considerable help over and above the assessment of the extent of nerve injury and the early assessment of recovery. Particularly in progressive muscular atrophy (less often in the other diseases) the condition of fasciculation is seen. (This condition used to be called fibrillation, but with the better understanding of spontaneous muscular activity resulting from the introduction of electromyography, the term fibrillation is now applied to the fine reactions of denervation, whereas the coarse activity visible to the naked eye has been renamed fasciculation). Fasciculation potentials are electrically indistinguishable from motor unit potentials, but occur in a muscle at rest. In many cases of progressive muscular atrophy, fibrillation potentials are found intermingled with fasciculation potentials in the resting muscle.

Proximal Neuropathy is a term given to lesions of the nerve roots and trunks prior to branching of the axon. Such lesions include compressions and irritations of the roots by prolapsed intervertebral discs, extramedullary neoplasms of the cord and

meninges, and the various toxic, infective, metabolic and allergic neuropathies. Spontaneous fibrillation will be found following a complete nerve lesion, but more commonly neuropraxia with an electrically silent picture is found in the severer forms of proximal neuropathy. Nerve irritation is however more common than nerve degeneration, and this leads to sustained involuntary muscle spasm in the muscles supplied by the particular

often in the facial musculature than in the spinally innervated muscles.

Peripheral Neuropathy. With the exception of injuries already noted, this condition is practically limited to polyneuritis. Spontaneous fibrillation may occur at rest if nerve fibres are completely damaged, but usually polyneuritis leads to a variable degree of degeneration of the nerve branches. The

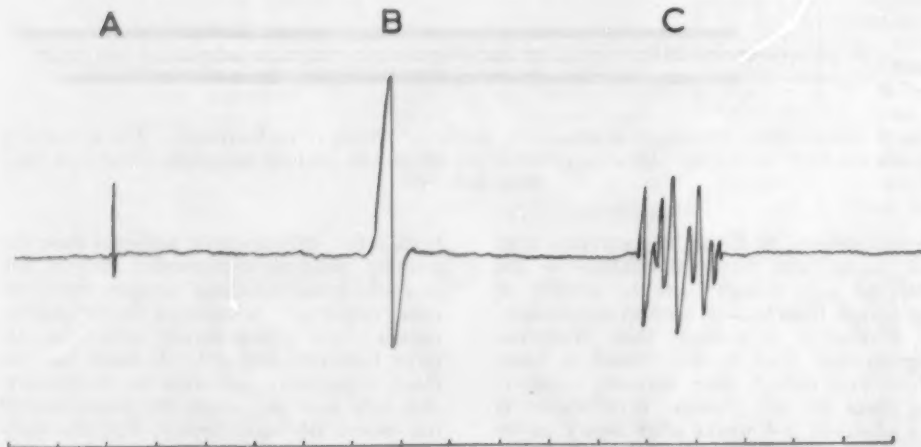


Fig. 5. Diagrammatic representation of the types of action potentials commonly found with peripheral nerve injury. (A) Fibrillation potential from a fibre having complete nerve loss. (B) Normal action potential from a motor unit whose nerve has escaped damage. (C) Polyphasic recovery potential. (Time scale: 1 division = 10 milliseconds.)

nerve roots involved, e.g., spasm of the hamstrings from a lumbar 4-5 disc lesion. This spasm can sometimes be shown clinically, but often the evidence is found on electromyographic examination only, in the form of regular sustained rhythmical discharges of normal motor unit potentials. These discharges may be potentiated by movements of the limb which irritate the particular nerve roots involved. Occasionally a type of fasciculation is seen associated with either rest or minimal activity of the muscle, in which grouped motor unit potentials are seen, though the picture is lost if any significant amount of voluntary activity supervenes. This picture is seen rather more

result is a breaking up of the motor unit to give a polyphasic action potential, though the break-up is usually less marked than that found in the myopathies.

Myopathies

These may briefly be considered as of two basic types, 1. diseases of the myo-neural junction, 2. diseases of the muscle tissue.

Diseases of the Myo-neural Junction are characterised by either rapid fatigue of the motor end-plate (myasthenia gravis) or by

delayed or incomplete recovery (myotonia congenita, dystrophia myotonica); both groups of diseases give characteristic electromyographic pictures.

Maintained voluntary contraction of the muscles in myasthenia gravis gives a decline in amplitude of the individual motor unit potentials and with fatigue the units become polyphasic. The changes are therefore of help in diagnosis though not essential thereto if the therapeutic prostigmine test is positive.

Myotonia gives a most characteristic and dramatic electromyographic picture. The muscular tissue in myotonia appears to be hypersensitive to mechanical irritation, so that insertion of the needle electrode or the movement of the needle within the muscle immediately provokes a high frequency chain oscillation which dies away in a few seconds. This electrical activity produces a noise on the loud-speaker most reminiscent of the sound of a 'dive-bomber' in action, the pitch being at first high and then falling as the oscillations die away. The individual potentials found in this condition are of small amplitude and short duration, similar to the fibrillation potentials of denervation. It would appear that in myotonia there exists some increased sensitivity of the muscle fibres to some by-product or metabolite of muscular contraction; direct stimulation of a few fibres by the needle electrode then initiates a chain of independent contractions in the muscle, irrespective of nervous stimulation. Repetition of this response leads to rapid fatigue with shortened duration of spasm and increased stimulation threshold.

Diseases of Muscular Tissue are primarily the myopathies or muscular dystrophies, together with such disorders as thyrotoxic myopathy and dermatomyositis. All these diseases have in common a disintegration of the motor unit potentials. There is sporadic death of muscle fibres which leads to a breakdown of the synchronous contraction of the component muscle fibres of each motor unit. The smooth summation of the individual fibre potentials into a unit potential is therefore lost and the motor unit potential becomes highly polyphasic and of low amplitude. So marked may be this change in advanced disease that only scattered individual fibres may be left which produce a fibrillary type of potential on volition: since the nerves themselves are not involved in these diseases, fibrillation is not seen at rest.

The complex low amplitude polyphasic potentials seen in the myopathies give a high frequency sound on the loud-speaker which has been likened to 'rain on a tin roof' in contrast to the low-pitched rumble of normal muscle.

SUMMARY

Electromyography offers a means of measuring and recording the electrical changes which occur in muscles. Given an adequate understanding of the basic anatomy and physiology of neuromuscular activity the electromyograph offers both the research worker and the clinician a useful tool for the study of muscular behaviour in health and disease. In anatomical and physiological studies of muscular activity, in the clinical diagnosis of neuromuscular disease, in the control of treatment and in the assessment of prognosis (especially peripheral nerve injury), it can prove extremely valuable.

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REPRODUCTION IN GOLDFISH

OR

WHAT IS THE MATTER WITH LOVE-LIFE IN THE FOUNTAIN?

Dr. Richard B. Terry, recently of this Hospital and now at Chicago, and an authority on the ways of fish, used to deplore the cleaning of the Fountain before View Day, because this is about the time when fish spawn, and any offspring of the goldfish inhabiting the Fountain must therefore be automatically and regularly removed each year, presumably to the sorrow of their parents. Professor Garrod, having expressed this belief of Dr. Terry's in the hearing of the Clerk to the Governors, was invited to back it in the terms of the following legal agreement, which he did. The ensuing correspondence is self-explanatory.

* * *

In consideration of the Governors undertaking not to clean the Fountain Pond in anticipation of View Day, 1955, nor at any other time during the said year 1955, I agree to give two goldfish to the Hospital for immersion in the said pond, provided the existing goldfish have not in the meantime bred and produced offspring not less than four in number.

L. P. GARROD.

March 30, 1955.

* * *

Professor L. P. Garrod, M.D., F.R.C.P.,
Department of Pathology,
St. Bartholomew's Hospital.

Dear Professor Garrod,

I am sending you, herewith, a copy of your agreement for your signature which enables me to return to you the menu card which you wanted to have back. If you will sign the little Agreement over the 6d. stamp, and return it to me, all will then be in order!

There is, however, one matter which I want to mention to you. When I called over the Head Porter to tell him that I was contemplating not having the fountain cleaned out until after the piscatorial mating season, he told me that if he left the fountain uncleaned for too long, he always got complaints of the smell from the wards in the East Wing! If the fountain ever does smell, which I very much doubt, would the urge to mate on the part of the goldfish be disturbed if we had the fountain running more often, i.e., change the water more frequently, without actually cleaning it? Alternatively are you, as Sanitary Officer to the Hospital, prepared to assure yourself, from time to time, that no noxious or harmful smells are emanating from the pond which could possibly

cause offence to the Sisters in the East Wing?

From the foregoing you will observe that, whereas I am anxious to give the goldfish a chance to breed, I may have to seek the support of the Sanitary Officer of the Hospital in the process.

Yours sincerely,

C. C. CARUS WILSON,
Clerk to the Governors.

March 29, 1955.

The Clerk to the Governors,
St. Bartholomew's Hospital,
London, E.C.1.

Dear Mr. Carus Wilson,

I have pleasure in returning our agreement duly signed.

It distresses me exceedingly to hear that you may perhaps, for reasons which I had not foreseen, be unable to fulfil your part in this agreement. I must of course do my best to ensure that nothing may stand in your way. I will undertake as Sanitary Officer to keep constant watch on any effluvia perceptible in the square. So far as I am aware, to have the fountain playing should not interfere with the reproductive process of goldfish, and if any possible nuisance can be abated by turning on the water, say, once a week this should be a very happy and agreeable solution of the difficulty.

Yours sincerely,

L. P. GARROD.

March 30, 1955.

Dear Professor Garrod,

I am assured by the authorities that:—

1. The breeding season for goldfish is now so long past that if any activities of that kind had been undertaken by the fish in the fountain pond, their offspring would have by now appeared.

2. That no offspring have, in fact, appeared.

In the circumstances, I think you will probably agree that you would become liable, under the Agreement, to place in the fountain, at your own expense, and at a suitable time, four to six young goldfish in such a condition of health and well-being as will lead a reasonable person to suppose that in the months to come they will be able to perpetuate the species. I assume that, for this purpose, an appropriate distribution would be two males and two females, although I would, of course, pay the greatest regard to any other distribution you might care to suggest in view of your greater biological experience.

Yours sincerely,

C. C. CARUS WILSON,
Clerk to the Governors.

September 23, 1955.

Dear Mr. Carus Wilson,

Thank you for your letter of September 23. I have not answered this before since I have had to make some enquiries before I can fulfil my part of the contract.

I believe the date on which I become liable to add to the fountain stock of goldfish is November 1, and my recollection of the Agreement is that the number of fish I have undertaken to supply is not four but two.

Furthermore, I recollect no stipulation about their sex. I gather that the sex of a goldfish cannot be determined until it is of a considerable size and age and therefore incidentally very much more expensive. Since I shall be fulfilling my part of the contract by supplying comparatively small fish of unknown sex, this is what I propose to do. I sincerely trust that they will not immediately be devoured by the present inhabitants of the fountain.

I may add that the pond goldfish I have seen for sale are not all of a pure gold colour, and if it should prove that those with pale areas or black spots in their skin are less costly than the rest, provided they are properly to be described as goldfish, these are what I shall probably supply.

Perhaps you will kindly let me know at what time on November 1 it would be convenient to you to witness the addition of these fish to the present population of the fountain.

Yours sincerely,

L. P. GARROD.

October 25, 1955.

Dear Professor Garrod,

I have had your letter of October 25 about the goldfish, for which I thank you.

It would be quite convenient for me to witness the introduction of the new goldfish to the pond on November 1, at almost any time of day other than between the hours of 2.30 and 3.30 p.m.

I earnestly hope that you will observe the spirit as well as the letter of your contract, and see that the goldfish to be introduced to the pond are large enough to have a reasonable chance of escaping the fate which you mention in your letter as a possibility.

Yours sincerely,

C. C. CARUS WILSON,

Clerk to the Governors.

October 28, 1955.

Dear Mr. Carus Wilson,

I have delayed replying to your letter of yesterday until the goldfish were in the bag, or rather in a can. They are handsome creatures of the purest gold colour and I should judge well able to stand up for themselves and just approaching marriageable age. I regret infinitely however that I do not know their sex.

Would it be convenient to you to witness their addition to the population of the fountain at 2 p.m. to-day?

May I suggest that now that the period of our agreement is over the fountain should be cleaned

as soon as possible. Large quantities of leaves are accumulating in it and I am given to understand that when these decompose they give off noxious vapours which are liable to asphyxiate the fish.

Yours sincerely,

L. P. GARROD.

November 1, 1955.

P.S. I have just been told by Dr. Marshall that a good way to make goldfish breed is to put a placenta in their pond. I wish I had known this before.

Dear Professor Garrod,

The brief ceremony of depositing the goldfish into the pond which was due under your Agreement having now been completed, the matter is closed, and I am returning to you the Agreement which you signed in March last.

I also have to acknowledge your very handsome additional gift, quite unstipulated under our Agreement, of one packet (small size) of Brosian Pond Fish Food, which I accept and for which I have to tender on behalf of the Governors my most grateful thanks.

Yours sincerely,

C. C. CARUS WILSON

Clerk to the Governors.

November 1, 1955.

* * *



The dramatis personae

IMPRESSIONS OF MEXICO CITY

by J. T. SILVERSTONE

ARRIVING anywhere at 4 a.m., at the end of a twelve hour flight, is not calculated to make for sharpened senses; but as soon as I had left the ultra-modern airport, of which any interplanetary airline of the future would be proud, I entered cobbled stone streets lined by peeling plaster walls. Thus I immediately discovered the essential feature of Mexico City: contrast.

The city lies on an 8,000 feet high plateau almost completely surrounded by mountains, with the peak of Popocatepetl rising snow-capped in the distance. The design of the buildings varies from the Spanish-Baroque of the cathedral, the largest in the Western Hemisphere, to the square-cut modernity of a new twenty storey sky-scraper. This sky-scraper presented unique construction problems, for it is estimated that the surrounding buildings are sinking at the rate of a foot a year—Mexico City is built on a lake-bed that is slowly subsiding.

Many wide thoroughfares intersect the newer parts of the city, the Paseo de la Reforma being admired for its tree lined walks and its magnificent monuments to Charles V, to the Indian tribes, and to Independence. In the old quarters, narrow streets bustling with people are a picturesque, if somewhat nidorous, feature. Traffic, as in all cities, is becoming a problem, and is made worse here by the fiendish disregard for others with which the Mexicans drive. By comparison, the taxis of Paris are sedate and decorous. The climate is equitable, with cool nights throughout the year and a relatively mild rainy season in the summer.

The history of Mexico, crowded with change and incident, provides some basis for the variety of inhabitants and institutions within its Capital. The Aztecs were the first to build a town on the floor of dried Lake Texcoco. Two hundred years later, in 1521, Cortez and his conquistadores overthrew the Indians, razed the city and subjugated the natives under Spanish rule. The ruling and professional personnel were recruited solely from Spanish born for the next three hundred years, and the Church grew to control over half the property in the country. The

overbearing pride of the Spaniards led to resentment among the Creoles, or Mexican born whites. They bloodlessly achieved independence from Spain in 1821, but did nothing to redress the grievances of the Indians, nor to lessen the hold of the Church. Such local despotism lasted only until 1833, the year of *La Reforma*, when the privileges of the Church were severely curtailed. From 1821 until 1876, the year Diaz assumed the Presidency, was a turbulent period, during which there were no less than 74 governments and two invasions, one by the United States and the other by France. Diaz stabilized the country by ruling as a dictator and opening the mineral resources to foreign exploitation. The reaction of the intensely chauvinistic Mexicans against foreigners resulted in the famous revolution of 1911, which saw the banning of Church education and severe restrictions in foreign rights, as well as providing Pancho Villa and Zapata with an unparalleled opportunity for banditry. Since the revolution, there has been national expropriation, with compensation, of many mines and oil wells. Yet even in 1950 the English still controlled some of the railways and reaped the benefits of their oil investments.

From this background is emerging a country attempting to realize ambitious plans under severe economic handicaps. There are great differences in the standard of living between the *peón* and the rich industrialist, greater than in any European country I have visited. For instance, one night on leaving a nightclub, where it had been difficult to obtain a table owing to the smartly dressed crowd waiting to be amused, we almost stumbled over children lying curled up on the pavement. I indicated them to my Mexican companion, who displayed the lack of concern associated with the commonplace. He told me that there are homes for such children, but that they prefer freedom and discomfort to institutional discipline. In any restaurant or bar in the city, children sidle up to the table, raise their dark brown eyes and implore you to buy the chewing gum or newspapers they are selling. Apparently

they never go to bed, for they are to be found at all hours of the day and night.

South of the city, near the new university, there is a modern housing estate containing some of the most luxurious homes in America. Yet a ten minute walk from these wonderfully appointed Pedregal Gardens can lead to a small village, typical of many, with its unpaved street and houses consisting of nothing more than rough-hewn stone shelters, or wooden shacks, not dissimilar to the sheds dotted about the allotments in suburban London.

The contrasts are not only between rich and poor, ancient and modern, but also between Mexican and American. A 'super-market' (a self-service grocery shop) had been built in the suburb where I was staying. The women had just become used to wheeling their baskets from shelf to shelf, pulling down the goods they wanted and paying to the cashier without questioning the value of the merchandise. In the native, Indian or Mexican market, (no adjective really describes the quality by which non-American features differ from American), there is colour, smell and noise. Prune-faced Indian women sit against the wall of the market with neat little piles of dull-coloured dried herbs laid out before them. Each has her own particular variety, and remains mute and immobile, as if praying at a shrine. Bustling in and out of the market and along the pavement in front of the old women are the shoppers, trailed by small children hired to carry the baskets. Within the market proper, there is heard the sound of acrimonious bargaining and the chatter of gossiping women. But before one hears the sounds and notices the detail, one is almost blinded by the brilliant hues of the *zarapes* hanging above the stalls, woven as in a frenzied nightmare. They are reminiscent of a pageantry long-since dead in Europe. The nastel green and pink of entrails swirling from a hook in a butchers stall, and the toothsome leer of tropical fish give the market part of its distinctive character. Shopping is not as impersonal as in the 'gringo' market (gringo being a word applied derogatively to North Americans, as Sassenach is applied to the English by the Scots). Bargaining is enjoyed by everyone, and nothing is bought without many shrues of disdain, remarks of disparagement, lies concerning cost, and all the other tricks of this universal trade.

Can one blame such a colourful people for being resentful of the Americanization which is relentlessly changing the face and character of Mexico City? Occasionally, when the resinous wine of the country runs freely, this resentment is aggressively expressed. The visitor is reminded that he is in the country of Zapata; the country where human sacrifice ceased but four hundred years ago. Mexicans may have bravado, but they are helpless without the money available only north of the Rio Grande.

Despite this ill-feeling, the need for improvement in Public Services is great and not all the effects of American influence are unwelcome. Sanitation and medical services are grossly inadequate, every drop of water must be boiled, and it is estimated that half the population at least, harbours intestinal parasites. Education, although theoretically universal, is not available to many, and the illiteracy rate is high. Illiteracy will not easily be overcome in a country where sixty different Indian languages are still spoken.

Cheap labour has made many of the modern construction projects possible; it would have been difficult, for example, to ornament cinemas with their intricate mosaic façades, without the services of many craftsmen. The cinemas of Mexico City, where a fixed low price is placed on seats by order of the Government to make them readily accessible to the poor, are probably amongst the most lavish in the world. In addition to vivid exteriors, which offend some, depicting as they do Mexico rising from the chains and fetters of European exploitation, the interiors are extravagantly furnished. Fountains play in the foyers, which often have murals by eminent Mexican artists. One hesitates to leave such splendour for the doubtful pleasure of the film.

Mosaics and murals figure prominently in the new University City, which is built on a site studded with outcroppings of volcanic rock. This stone was used for most of the construction, thus ensuring harmony of the buildings with their background. The University City is divided into four blocks; two either side of the Pan-American Highway. The largest section contains the academic buildings, two fifteen storey towers at one end dominating the entrance from the highway. One of them, the library, is completely covered in mosaic Aztec symbols by the Mexican artist Juan O'Gorman. Running eastwards to the tall science building is a

1,000 feet long Humanities building with a colonnade facing the large lawn in the centre of the campus. At the eastern end is the glass-fronted medical school, connected to its strikingly painted main entrance by an interweaving series of ramps. Forming the southern side of the rectangle are the engineering buildings with beehive-like domes covering a flat roof. One oddity is a small concrete nissen hut on legs for trapping cosmic rays. Each faculty building has its own library, coffee bars, cafeteria and student common rooms, and although all the faculties are close together, each retains a social and architectural individuality.

During the construction a circular 'pyramid' was uncovered, said by archeologists to be the oldest building yet discovered in the Western Hemisphere. It was, like Pompei, overwhelmed by larva.

South of the academic buildings are the sports grounds and the splendid Olympic pool. Changing facilities are spacious, and the ground allotted to the various sports is more than adequate. Student housing is being erected in this area, so Mexican students can look forward to having the opportunity of an early morning swim without walking more than a hundred yards.

Across the highway, reached by a complex system of underpasses, is the Olympic Stadium, shaped like the crater of a volcano. On the wall facing the road is a bas relief by Diego Rivera representing the history of sport. This stadium was the site of the last Pan American Games, which saw unacclimatized athletes puffing away in the rarified atmosphere. It is also used for some of the many football matches so enjoyed by Mexicans. The standard of soccer throughout the country, as in most of Latin America, is very high, and the Mexicans follow the fates of the various European teams with interest.

The least developed quadrant is intended for faculty houses and apartments. The city when completed will be self-contained, with its own shops and transportation facilities, and will be able to accommodate 30,000 students in its class-rooms and laboratories.

Great national pride is taken in this magnificent project. However, there is a certain old world eccentricity in the economics of such an undertaking, when the bare necessities of life are virtually unobtainable for many. A professor told me that the country could ill afford such a university, but

the performance of such grandiose gestures was part of the national character.

Although the wisdom of constructing a new medical school can be questioned, the old building could hardly have survived many more years of student abuse. It is situated in the heart of the old city near the Zocalo, where the Cathedral and the National Palace are uneasy neighbours. It was once the home of the Inquisition, and today the iron-studded oak doors swing shut every evening as they did in the sixteenth century. Like most Spanish-style buildings there is a central courtyard surrounded by pillars supporting a balcony, and during the day students swarm all over the courtyard and lean or sit on the balcony; those above exchanging comments with their friends below, or whistling, hooting and shouting at any passing girl. Blond hair has a rarity value in Mexico, and any lady who possesses hair of a shade lighter than dark brown becomes the cynosure of her friends and the ideal of the men. In fact, one young lady medical student with fair hair hardly dared enter school in the morning during her first six months; for the pandemonium which broke loose on her appearance was enough to disconcert the most hardened film star.

The medical course lasts six years and includes the biological subjects required in England for the 1st. M.B. As the annual intake is a thousand students, all the classes have to be repeated several times. Starting at 8 a.m., classes continue throughout the day finishing at 9 p.m., but no student attends the whole day. Rather they decide which group they wish to join for the various subjects, and go to the college only when their group is scheduled for a class. This system leads to a very interrupted work-day, for a student may have one class at 9 o'clock in the morning, another at noon and nothing further until 8 in the evening.

The student activities do not differ greatly from those in England, excepting, perhaps, in the absence of organized sport. In Mexico, the medical student is expected to put such things behind him and to apply himself assiduously to his studies. Frequent examinations tend to discourage backsliding.

I mentioned the hooting and whistling by the medical students; loud demonstrations of approval or derision are common among Mexicans and are heard at their most unrestrained in the bull ring. Mexico, in the habit of her northern neighbours, boasts the

largest bull ring in the world, and is conceded by many to have the best bulls. Bull-fighting is the most popular spectator sport in Mexico, and seats are difficult to obtain during the season, when Spanish and Mexican matadors come to Mexico City. The tradition remains Spanish; and as Spain sometimes attracts Englishmen to its rings, so Mexico trains American aspirants to the title of matador. Having never been to a bull-fight outside Mexico, I cannot compare the ceremonial within the ring. Although the ritual of the *corrida* may be the same in the two countries, I am sure the activities outside the ring in Mexico City are distinctively Mexican.

Encircling the Plaza de Toros is a chain of food stalls where delicacies of all kinds are available. The Mexican form of sandwich, called a 'tacos', is to be seen everywhere. The bread, or 'tortilla', (rather like the Indian chipatti), is rolled up with filling in the manner of a Swiss roll. Hot soups, and steaming crustaceans are ladled out to the hungry throng surrounding the stalls. In spite of the appetizing (to some) appearance, I should like to issue a warning to any who might be tempted. Two American friends of mine, who had visited Mexico on two different occasions, both returned with Amoebiasis contracted from eating *tacos* bought from street vendors.

Nearby are the bars. These combine the features of an open-air café and a continental cabaret. Tables are under cover, but the wall facing the street is open, allowing passers-by to enjoy the pulsating music. In the cafés and night-clubs typical Latin American music is played: harsh trumpets sound against a background of bongos, maracas, claves and marimbas (a xylophone long enough to be played by four people at once). From Cuba comes the dance rage of Mexico City, the Cha-cha-cha, a variation of the hippy mambo. There is a preponderance of men in such places, for Mexicans do not often take their wives out; despite the influence of American films which exalt emancipated womanhood, the wife's place in Mexico is still the home.

Mexican folk music is sung by troupes of players called mariaches. These were originally strolling minstrels who sang to guitar accompaniment of the loneliness of life in the ranches, of unrequited love, or of revenge. Flamboyant, throbbing and infinitely sad, the music is a true echo of Mexico.

ANNOUNCEMENTS

Births

CARSON.—On October 3, to Jean (*née* Marsh) and Dr. M. B. Carson, a son, a brother for Diane and Elizabeth.

GIBB.—On October 29, to Mary (*née* Feetham) and Dr. William Eric Gibb, a son.

HAIGH.—On October 1, to Sandra (*née* Hewett) and Dr. A. Haigh, a daughter, (Amanda Kathleen).

MOON.—On October 19, to Jean (*née* Lang) and Dr. A. J. Moon, a daughter (Jennifer Margaret).

PUGH.—On October 8, to Jessie (*née* Gosling) and Dr. J. I. Pugh, a son (John Harry).

READING.—On October 29, to Ena and Squadron Leader J. H. Reading, M.B., B.S., a daughter (Anne Elizabeth Rhianon).

SHAERF.—On October 20, to Valerie and Dr. David Shaerf, a son, (Robert Alan).

STANFORD.—On October 16, to Pauline (*née* Alexander) and Dr. R. Mark Stanford, a son (Brian Mark).

SYRED.—On October 15, to Margaret (*née* Francis) and Dr. Deryck Syred, a daughter (Lydia Jane).

Engagement

STANLEY SMITH—PALMER. The engagement is announced between Dr. G. Stanley Smith and Miss M. K. Palmer.

Marriage

ROXBURGH—JONES. On September 10 at St. Bartholomew-the-Great, Dr. Robert Alexander Roxburgh to Muriel M. Jones.

Deaths

BOWES.—On October 20 at Bedford, Gerald Kessick Bowes, D.M., D.P.H., aged 64. Qualified 1913.

HAMILTON.—On October 18 at St. Helier, Jersey, Major-General William Haywood Hamilton, C.B., C.I.E., C.B.E., D.S.O., F.R.C.S., aged 74. Qualified 1902.

TURNER.—On October 19, Percy Edward Turner, M.D., D.P.H., aged 85. Qualified 1893.



Fig. 1a. The patient before operation.



Fig. 2a. Seven months after operation.



Fig. 1b. Scalp before operation.



Fig. 2b. Seven months after operation.

TURBAN TUMOURS

by L. J. CHALSTREY

THE transmission of disease from one person to another has been of vital interest since the beginning of medical history. The occurrence of hereditary disease, in particular, has always proved a fascinating and—until relatively recently—mysterious phenomenon. When the hereditary condition is neoplastic it becomes even more interesting, not only as an example of the working of genetic factors in the production of disease, but also because it immediately draws us to the brink of that great and, as yet, largely unfathomed problem of the aetiology of new growths.

An account is presented here of a familial neoplastic disease sometimes known as 'Turban Tumours.' The case history of a patient and details of similarly affected relatives are given, followed by a discussion of various views as to the correct classification of the disease.

CASE HISTORY

R.W. (232988), a 62-year-old farm worker, was seen on 16th March, 1955, while in hospital, for the treatment of multiple nodules on the head and body. The history dates back to 1912, when, at the age of 19, he first noticed a swelling on the head. This tumour was excised, but during the following years a few nodules appeared on his body, and in 1920 he had one removed from his back. In 1922 numerous nodules appeared on the scalp and he attended every week for some months for the removal of three or four at a time. For many years the nodules slowly increased in numbers and size. There were periodic visits to the Hospital for the removal of some of them. In 1950 the patient was admitted elsewhere for the mass excision of the tumours of the back, chest, and supra-pubic region. At that time the nodules were described as being of two varieties: (1) smooth, slightly lobulated, sessile and slightly bluish and (2) pedunculated, very lobulated, slack and somewhat pigmented. They were quite painless, but interfered with his work. Recovery was uneventful, though some small nodules remained. By 1954 the patient had multiple large tumours, particularly on the scalp, which had received no surgical attention for some years. They were unsightly and were often traumatised during his work. They ulcerated easily and healed with difficulty.

He was admitted to Bart's on 26th August, 1954, and about two dozen tumours were removed from

the scalp. During the following weeks a few lumps were removed from the legs and back under local anaesthesia. At the time of his readmission in March, 1955, there was massive involvement of the scalp, which made it difficult for him to wear a hat, and some of the tumours had broken down, discharging an unpleasant smelling material. There were tumours of all sizes from 0.3 to 4.0 cm. diameter. Some had coalesced into large masses. The shapes also varied; some were almost flat and appeared to be embedded in the surrounding skin, others were lobulated and freely movable on a short, wide base, and a few were pedunculated. Whereas many had a pinkish, fleshy appearance, others were bluish in colour. All were smooth and many (Figs. 1a and 1b) were hairless. The smaller nodules were of a firm consistency, while the larger ones, being softer and rubbery, gave the impression of being cystic. Numerous small nodules were present in the skin of the centre part of the face; some near the external auditory meatus on both sides blocked the passage of the outer ear and impaired hearing. Other lumps of varying sizes were observed on the neck, upper chest, upper back, sacral regions, calves and right scrotal region. The arms, lower abdomen, lower back, and thighs were free, but showed scars where growths had been removed. Lymphadenopathy was present in the posterior triangles of both sides of the neck, probably due to the low-grade infection which invariably developed when lumps on the scalp were traumatised and ulcerated.

On 18th March, 1955, the areas of the scalp most severely affected by growths were excised (Fig. 3) and split-thickness skin grafts applied to the defect. Figures 2a and b show the scalp seven months after operation. Histological sections showed typical basal cell carcinomata (turban tumours) consisting of nodular formations covered by a thin, flat, intact epidermis. Connective tissue capsules lined each tumour and projected inwards, dividing the tumour into clumps of basal cells lined by hyaline membranes. Small round deposits of hyaline material were also present between the cells, and in some places there were cystic spaces and pseudo-glandular formations. (Figs. 4a and b.).

Subsequent treatment has included a therapeutic test for radiosensitivity. A lesion in front of the right ear was irradiated on nine separate occasions in a period of two weeks, a total of 3150 r units being given. The lesion decreased in diameter from 2.5 cm. to 1.2 cm.

The patient was able to provide a considerable amount of information about members of his family. Three of his relatives have been seen at this Hospital, two at other Hospitals, and the remainder have given details of the condition of their skin in response to a questionnaire. In Table 1 solid symbols indicate members of the family having the disease.

(d) A sister of the patient, aged 52, first noticed lumps at the age of 38, when several appeared on both sides of her nose. They have remained very small, the largest one on the left temple being 0.5 cm. in diameter. The body is clear.

(e) Another brother, aged 50, first noticed several nodules on his head when 20 years old. They remained the same size for some years and then gradually grew larger. Other tumours appeared on the chest, back, and left hip, but the majority were situated on the vertex and left side of the scalp, the face being clear. Although painless, the swellings sometimes itched and tended



Fig. 6. A daughter of the patient (B).

to bleed if scratched. As with the others, this patient's chief complaint was that the lumps were a nuisance and so unsightly as to be "... such a pest to me." Many of the tumours were excised and were reported to have the microscopic appearance of sweat gland adenomata, some having undergone cystic change.

(f) A third brother, aged 48, first noticed a nodule on top of his head when aged 38. This slowly grew bigger and others appeared. The largest are now 2 cm. in diameter. There are several lumps in the scalp and numerous small nodules on the forehead in the region of the hair margin. The body is clear.

(g) The patient's youngest sister first noticed a lump at the age of 29. Several appeared on the scalp and gradually grew. The largest are now 5 cm. in diameter. Numerous minute nodules are present on the left ala nasi and there are three lumps on her back and one on the abdomen.



Fig. 7. A brother of the patient (C).



Fig. 8. A sister of the patient (G).



Fig. 3

Areas of scalp excised.

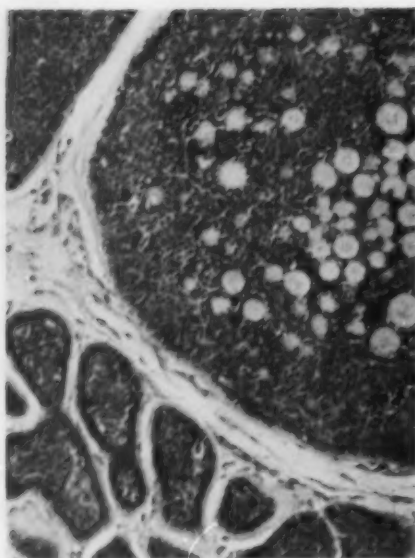


Fig. 4b

Clumps of basal cells are lined by hyaline membranes. Small, round deposits of hyaline material are present between the cells. (x150).



Fig. 4a

Section of a nodule showing the thin, intact epidermis and connective tissue capsule and septa (low power).

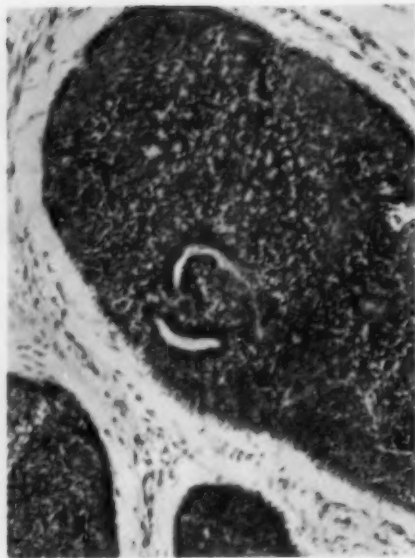


Fig 5

Columns of basal cells surrounded by hyaline membranes are separated by connective tissue septa. The histology is similar to that in Figs. 4a and b. (x150).

Discussion

Basal cell carcinomata may be divided into two groups; some arise in the epidermis and produce a thickened plaque, which soon ulcerates to form a slow-growing 'rodent ulcer'; while others are formed deep in the dermis from the sweat and pilosebaceous systems, where they become well demarcated and often lobulated. The ones that have been described in the case histories are obviously of the second type.

Turban Tumours were first recorded in 1842 by Ancell, and following this several cases were reported in Europe and America. In a survey of the literature between 1842 and the end of 1954, Evans collected 47 cases, 30 of which were females and 17 males. In about one third of these cases other members of the family were also affected. He says that the disease is an example of a Mendelian dominant trait, stronger in the female sex. Since the beginning of 1955, a single case described in April (Lyon, 1955) and the one given here have brought the total to 49.

There has been much discussion and disagreement regarding the origin and classification of these tumours. The following names, which have been given to them are an indication of the confusion: epithelioma adenoides cysticum; benign epitheliomata with colloid degeneration; multiple benign cystic epithelioma; cystic basocellular epithelioma; Brooke's Tumour; Brooke-Fordyce Disease; adenoid cystic epithelioma; cylindroma; endothelioma capitis and Spiegler's Tumour. Some of the factors which have been employed in classification include: dominant sites on the body, gross clinical appearances, and characteristics—e.g., benignity, growth rate, radiosensitivity, and familial nature.

Some early writers on the subject considered these tumours to be of endothelial origin but the great majority of workers, including the most recent authorities, look upon them as epithelial. Ronchese (1933), in a summary of the literature, regards tumours of this nature as basal cell epitheliomata of naevic origin. He mentions that some workers have suggested that they are derived from sweat glands, but that a more satisfactory explanation is that they arise from the pilosebaceous system—particularly the epithelium of the sebaceous glands. In a number of cases reported, though not in the ones recorded in this article, histological sections

indicated a close proximity of tumour and sebaceous gland. In some sections, the tumour seemed to constitute part of a sebaceous gland undergoing transformation into an epithelial mass. (Stillians, 1933; Schlammadinger, 1935; Ormsby and Montgomery, 1948.)

In their discussion on the subject Warvi and Gates (1943) point out that it is too seldom recognised that tumours of entirely diverse histological structure may present identical clinical features. They go on to mention that at least two histologically distinct tumours fit the clinical picture of this condition, viz., sweat gland tumours and pilosebaceous gland tumours. The tumours arising from sweat glands are said to be located primarily on the chest. They have been termed syringomata and are often non-familial and radio-sensitive. Those coming from the pilosebaceous system are found primarily in the centre of the face, are usually familial and are radio-resistant. These they call epitheliomata adenoides cysticum.

Willis (1953) states that sub-epidermal, basal cell growths, arising from the pilosebaceous epithelium or the sweat glands, are of an extremely variable nature and cannot be divided into distinct groups, either clinically or histologically. He further maintains that they cannot be separated sharply from the superficial rodent ulcer on the one hand, and the truly glandular skin tumour on the other. Any sub-division, he says, is purely arbitrary, there being all intermediate types and mixtures of types. It is therefore needless to distinguish between true sebaceous adenomata and basal cell growths. Similarly, he suggests that there is no sharp distinction between a sweat gland adenoma—in which some glandular formation happens to have been maintained—and a basal cell carcinoma of sweat gland origin. It is worth noting that in the case of the family described here, one patient is reported as having sub-epidermal, basal cell carcinoma; while his brother, whose tumours were examined histologically by another pathologist, was said to have sweat gland adenoma.

Unfortunately, these tumours have never been given a definitive name. Both Brooke (1892) and Fordyce (1892) described cases in which the lesions were predominantly on the face and chest, and the condition is sometimes referred to as Brooke's Tumour or Brooke-Fordyce Disease. It was Brooke who gave the name epithelioma adenoides

cysticum to growths of this kind. When the lumps predominate on the scalp they are also known as Spiegler's Tumours (1899) and Turban Tumours. Warvi and Gates criticise the term epithelioma adenoides cysticum in that it is too vague. They mention that all non-keratinising epitheliomata tend to become cystic and that the term "does not connote a single, clearly defined pathological process and has been used for quite unrelated conditions." They further say that the term epithelioma adenoides cysticum should be reserved for a benign lesion of the hair follicle. While favouring separate classification, they do consider the possibility of a common cause. They suggest that in view of embryological relationship of the epidermis and cutaneous appendages, such as sweat glands and pilosebaceous systems, a congenital abnormality of the dermis might give rise to a variety of unusual epithelial structures.

Another possible factor which has been suggested as the cause of the skin tumours is the secretion of carcinogenic substances by the sweat and sebaceous glands. (Peacock, 1947). Experiments have been done in order to test for the presence of these substances, using extracts of tumours which were painted on to mice. No malignant growths resulted, but pre-cancerous changes were noted. (Evans, 1954).

SUMMARY AND CONCLUSIONS

The history of a patient and his relatives with multiple skin tumours has been discussed. Diversity of opinion as to aetiology, nomenclature and classification has been indicated.

The cases reported show clearly the characteristics of the disease. Onset is usually during adolescence or early adult life and is followed by several years in which there is little noticeable change. Then increase in the number and size of the tumours occurs, at first slowly, but later at a more rapid rate. By the sixth decade, multiple tumour masses are present on the head and often on the rest of the body. In seven out of the eight cases reported, nodules appeared first on the scalp, and this remained the main site of the disease. General health is unimpaired and the lesions are painless, the only complaint being their unsightliness. In advanced cases, the large tumours are easily traumatised and heal with difficulty.

The treatment of the condition is excision and skin grafting as necessary. In some

instances electrocautery has been employed for the removal of small nodules. Although the tumours are in some degree radiosensitive, X-ray therapy does not seem to be a practical method of treatment. Experiments (Evans, 1954) indicate that while irradiation causes regression it does not effect a cure, since the nodules usually recur after a few months. In the case reported, there was some regression of the remaining tumours, but it is too early to say whether or not they will recur.

In conclusion, an attractive and reasonable view is that these multiple benign, familial tumours of the skin and its epidermal appendages, are the varied manifestations of a common, inherited, underlying pathological process, the nature of which is at present unknown. With regard to nomenclature, the term multiple, benign, familial, nodular, sub-epidermal, basal cell epithelioma, with hyaline and cystic degeneration seems as complete a description as is possible—but it is far too long! When, as in these cases, the tumours are mainly situated on the head, the striking resemblance of the advanced condition to an Eastern head-dress makes the term 'Turban Tumour' still the shortest and best.

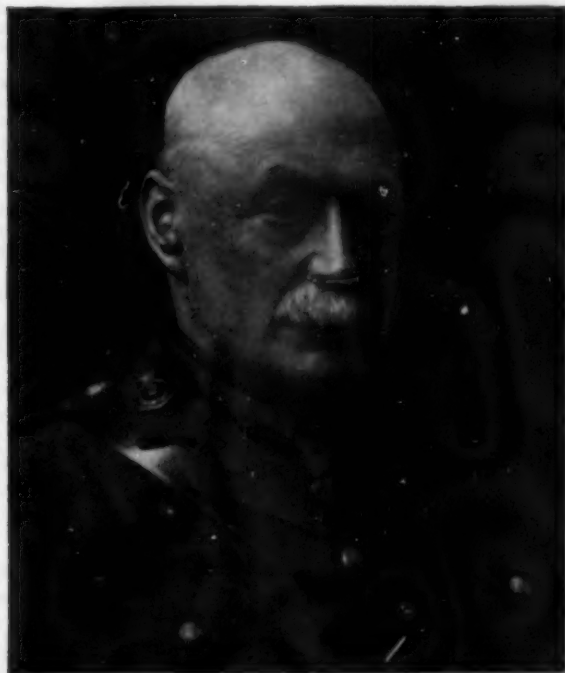
ACKNOWLEDGEMENT.

I wish to thank Mr. Alan Hunt for his encouragement and his permission to publish the case-history; Mr. W. Regan for his help in the preparation of the article; Mr. P. H. Jayes for giving details of a member of the family treated by him; Mr. Harrison of the Dept. of Medical Photography, and the many others who have given freely of their time.

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SIR D'ARCY POWER (1855-1941)



'THE DEAR MAN'

When I grow old
As you refused to grow old,
Will charm turn cold
And memories stale?

Across the span of the years,
Disenchanted and grey,
Your friendship steers
My faltering way.

I miss again
So wise a face,
So rich a grace
So rare a smile.

When I come to the turn of the lane,
To the end of the weary trail,
Will 'The Dear Man' once again
Help a lame dog over the stile?

W. R. BETT.

SPORTS NEWS

RUGBY

Annual General Meeting

The following officers were elected for the season 1955-56.

Captain : J. S. T. Tallack (re-elected).
 Vice-Captain : J. C. Mackenzie.
 Secretary : B. W. D. Badley.
 Treasurer : M. W. Sleight.
 Pre-clinical representative : L. Thomas.

The committee has appointed the following as captains of the junior teams :—

A XV—J. Worthy.
 Ex. A XV—M. L. B. Hayes.
 B XV—T. Shacklock.

1st XV v. R.M.A. Sandhurst. Lost 6-17.

Despite the almost perfect conditions Bart's gave their most disappointing display of two seasons. Playing uphill in the first half, Bart's were soon 6 points down (a penalty and a try). They improved towards the interval and Badley reduced the lead with a penalty. In the opening minutes of the second half a scrambling try on the left evened the score. Bart's then lost Lofts with an injured ankle, who up to that time had outshone the other forwards. Some sparkling play by the Sandhurst outsiders enabled them to score a further 11 points before no-side.

TEAM : B. W. D. Badley, R. M. Phillips, J. Plant, J. Neely, D. A. Lammiman, R. R. Davies, C. A. C. Charlton, B. Lofts, C. Carr, D. B. Lloyd, B. Palmer, J. S. T. Tallack (Capt.), M. Whitehouse, M. W. Sleight, J. C. Mackenzie.

1st XV v. Cambridge University LX Club. Lost 3-6.

In dismal conditions, but on a perfect ground at Cambridge, Bart's took the field against a strong LX Club XV, who kicked off and began at a furious pace, pressing strongly with their fast backs, who handled the greasy ball perfectly. Bart's withstood this onslaught nobly and after ten minutes it was noticeable that the Cambridge pack were failing to maintain their initial effort. Bart's then took the initiative and cleared their line with good foot rushes and relieving kicks, so that the play became more even. It was unfortunate that during a sortie into the Bart's half Cambridge were awarded an easy penalty, which presented no difficulty to their kicker. Just before half-time, G. J. Halls, making a promising *début* in the Bart's side, narrowly missed kicking a penalty from a difficult position.

The second half opened with the expected attack of the LX Club; but the Hospital pack, well-supported by their backs, counter-attacked strongly. After the Cambridge line had suffered many narrow escapes, their right wing broke away and outpaced the defence to score wide out. The kick failed. This set-back was rather against the run of the play and the Hospital reduced the deficit with a beautiful goal by Halls, and might well have equalized had not the referee been unsighted when Carr carried the ball over the line. The remaining minutes were evenly contested and the LX Club must account themselves fortunate to have won such a keenly fought and enjoyable game.

Outstanding for Bart's were B. W. D. Badley, whose covering and kicking deserved the highest praise, and J. Neely, who, in both attack and defence, was a continual source of trouble to the Cambridge side. (The LX Club beat London Hospital 24-9, and St. Thomas's 28-12).

TEAM : B. W. D. Badley, J. Plant, G. J. Halls, J. Neely, D. A. Lammiman, R. R. Davies, C. A. C. Charlton, D. W. Downham, C. Carr, J. C. Dobson, K. E. A. Norbury, J. W. B. Palmer, M. Whitehouse, J. S. T. Tallack (Capt.), J. C. Mackenzie.

1st XV v. Old Whitgiftians. Won 12-3.

The Old Boys kicked off on a cold, blustery day to begin a scrappy first half. They took the lead after 15 minutes by scoring an unconverted try. Bart's retaliated with a series of attacks, which culminated in R. R. Davies kicking a cheeky dropped goal following a scrum in the Whitgiftians' 25. There was no further score before half-time. In the second half Bart's gained the ascendancy. Following a scrum Charlton broke away, kicked over the line and just won the race for the touch-down. An unfortunate misunderstanding led to the kick being charged down. A few minutes later Phillips, who had on earlier occasions spoiled some good individual runs by hanging on to the ball, ran through several defenders to score a good try. Soon after Lammiman dribbled half the length of the field to score his first try of the season.

TEAM : B. W. D. Badley, R. M. Phillips, G. J. Halls, J. Neely, D. A. Lammiman, R. R. Davies, C. A. C. Charlton, D. B. Lloyd, C. Carr, D. W. Downham, J. S. T. Tallack (Capt.), K. E. A. Norbury, M. Whitehouse, E. F. D. Gawne, J. C. Mackenzie.

1st XV v. U.S. Chatham. Lost 3-6.

Bart's were without their Captain, Tallack, and two regular members of the three-quarter line. Chatham had an impressive record this season and were captained by M. J. A. Davies, an old Bart's

man. The game began at a fast pace and play switched from end to end with sometimes alarming rapidity. The Hospital backs with a plentiful supply of the ball had a good day and clearly had the measure of their opponents. One beautiful movement in which the ball reached the wing and was passed back into the centre was spoiled by over anxiety from being a certain score. G. J. Halls settled down well into the unaccustomed position of stand-off half and his attacking and kicking were good. He kicked a good penalty from the touch-line; but the score was levelled when the Services were awarded an easy penalty following a scrum infringement.

Bart's started the second half well and Chatham were held for long periods within their own 25, where the kicking of Davies proved most valuable to them. A good cross-kick by Lammiman found the Bart's pack in position, but a dropped final pass prevented a score. Counter-attacks were well held by the Hospital three-quarters, who were well covered by the back row, especially by Mackenzie who was captaining the side. In the later stages of the game the superior weight of the Services pack carried play into the Bart's half and just before no-side Davies received the ball from a scrummage near the Bart's line and dropped a goal from a most unlikely position.

TEAM: B. W. D. Badley, J. Laurent, J. Plant, J. Neely, D. A. Lammiman, G. J. Halls, C. A. C. Charlton, J. C. Dobson, C. Carr, D. W. Downham, J. Creightmore, K. E. A. Norbury, H. Thomas, E. F. D. Gawne, J. C. Mackenzie (Capt.).

THE CORNISH TOUR

1st XV v. Devonport Services. Won 5-3.

A very determined Bart's XV took the field against a strong Devonport side. The two packs immediately began to fight for supremacy in true West Country style. Although much lighter, the Hospital pack were more mobile and quicker in the loose.

In the first half there were some bitter exchanges on both sides, Services taking the lead with a penalty goal just before half-time. Gawne and Mackenzie were in great form and set an inspiring example to the other forwards.

In the second half the Bart's backs came into their own. Phillips, playing in the centre, was always dangerous, and it was he who scored the only try of the match. Lammiman caught his opposite wing in possession; Phillips, backing up, took the ball and ran hard down the touch-line to outwit the full-back and score under the posts. Halls had no difficulty with the conversion. From this time on Services pressed hard and once the ball was kicked over the Bart's dead-ball line; but there was no further score.

Gawne was ably supported in the pack by Roche and Norbury and the backs, especially Berry and Laurant, kept cool and tackled well under pressure.

TEAM: B. W. D. Badley, D. A. Lammiman, R. M. Phillips, G. Halls, J. Laurent, R. R. Davies, W. Berry, D. B. Lloyd, C. Carr, J. Dobson, K. E. A. Norbury, D. W. Roche, M. Whitehouse, E. F. D. Gawne, J. C. Mackenzie (Capt.).

1st XV v. Penzance and Newlyn. Lost 0-3.

Bart's made a poor start in their West Country tour, partly due to fatigue after the long journey and partly to the heavy ground, which had been softened by rain. At the beginning, both sides attempted to play open Rugby while the packs struggled for ascendancy. D. W. Roche made a welcome return to the side and excelled in the lineouts; but the set scrums were a different matter and Bart's were repeatedly pushed back in ragged fashion.

In the second half the play continued to be even, until the Penzance outside-half dropped a superb goal. This aroused the Hospital side and Penzance had to defend their line against several determined attacks. Towards the close Lammiman was unlucky not to score when he showed some of his old form in a grand run down the touch-line.

TEAM: B. W. D. Badley, D. A. Lammiman, J. Neely, G. J. Halls, R. M. Phillips, R. R. Davies, C. A. C. Charlton, J. Dobson, C. Carr, D. W. Downham, J. S. T. Tallack (Capt.), D. W. Roche, H. Thomas, E. F. D. Gawne, J. C. Mackenzie.

1st XV v. Paignton. Drawn 9-9.

Bart's attacked from the outset against a side considerably strengthened with guest players from Torquay, and soon showed their superiority with the dry ball. Within ten minutes Halls had put the Hospital six points ahead with two great penalty kicks. After this the appalling condition of the ground—it was nothing more than a sea of brown mud—began to tell. The game developed into a fierce battle between the forwards; both packs feeling it unwise to heel the slippery ball. A Bart's mistake was seized upon by Paignton and they scored an unconverted try. This roused the forwards and it is unfortunate to record that tempers became frayed on both sides. Numerous blows and kicks were exchanged and falling on the ball was too dangerous to be tried more than once.

Early in the second half Paignton scored an unconverted try. Bart's retaliated with some determined foot rushes. From a line-out near the Paignton line Roche gathered the ball and bulldozed his way over to score an unconverted try. The game swung from end to end and finally Paignton evened the score with another try. Shortly before no-side Mackenzie fractured a rib.

TEAM: W. Walton, D. A. Lammiman, J. Neely, G. Halls, R. M. Phillips, R. Davies, C. A. C. Charlton, D. B. Lloyd, C. Carr, D. W. Downham, D. W. Roche, J. S. T. Tallack (Capt.), H. Thomas, K. E. A. Norbury, J. C. Mackenzie.

1st XV v. Rugby. Lost 11-24.

Bart's kicked off into the sun against a strong side, which already had beaten Northampton and Coventry. Bart's frequently play better against a strong side and in the first 30 minutes their attractive football outshone this much vaunted Mid-land side.

After 15 minutes of vigorous forward play, it was obvious that the Hospital backs were a match for their opponents and the forwards endeavoured to give them the ball as often as possible. Gawne, Norbury and Roche monopolised the line-outs; but in the tight scrum we lost the ball, although Carr seemed to win the strike. Shortly after Rugby had taken the lead with a penalty goal, Bart's scored one of the best tries seen at Chislehurst for some time. R. Davies broke away in mid-field, threw off two tacklers, and passed to Howard Thomas, who was proving an able substitute for the injured Mackenzie. Thomas ran strongly through the defence and passed back to Davies, who went over between the posts. Halls kicked the goal. The Hospital morale was now high; Lammiman took the scrum-half's pass and in his characteristic high stepping style brushed off some ineffective tackles to score far out. Halls kick just failed to cross the bar.

Shortly after half-time Rugby scored an unconverted try when Badley, who had been fielding and kicking well, had a high kick charged down. Bart's attached strongly; Tallack showing great form in the loose and encouraging the other forwards by his example, Davies added to the score with a neat dropped goal from a loose scrum.

The hard games played on the Cornish Tour began to tell and the Bart's side tired. The Rugby forwards pressed strongly and the Hospital were forced to defend their line. The scores were levelled by a fine goal and from then on the question was could the Hospital hold out until no-side. The Rugby forwards pressed relentlessly and their rushes were only stopped by the fearless falling of Charlton at scrum-half. Before time Rugby succeeded in adding two goals and a try, thus winning 24-11. Just before the whistle the Hospital rallied and Phillips went down the wing only to be pushed into touch just short of the line. A good end to a very fine game.

1st XV v. Old Alleynians. Won 13-6.

ROWING

Club Regatta

The Boat Club held their second scratch regatta with St. Thomas's Boat Club on November 2, at the London Rowing Club, Putney. Over 70 entries were received and an ambitious programme was arranged for Eights and Fours. Unfortunately things got rather out of hand, and few crews took the water as originally planned.

At the conclusion of the racing Mrs. Hadfield presented the prizes.

WINNING CREWS

CLINKER VIII's
Felix Mas: R. B. Harcourt (S.B.H.), R. Ridsdell-Smith (S.B.H.), J. R. Strong (S.B.H.), P. Johnson (S.T.H.), E. M. E. Ernst (S.B.H.), G. D. Stainsby (S.B.H.), M. Wilson (S.T.H.), A. J. Salter (S.T.H.), A. R. Geach (S.B.H.).

LIGHT IV's

C. C. H. Dale (S.B.H.), D. A. Chamberlain (S.B.H.), J. Begley (S.T.H.), P. Pigott (S.T.H.).

COXED IV's

Lipoma: J. Bartlett (S.B.H.), N. Reid (S.T.H.), G. Hall (S.B.H.), R. W. W. Kay (S.T.H.), J. Watson (S.T.H.).

PRESIDENT'S SCULLS

Final: R. W. Beard beat R. Ridsdell-Smith by 3 lengths.

United Hospitals Regatta

Bart's won the Double Sculls and reached the final in four other events. A full account will appear in the next issue.

HOCKEY

Annual General Meeting

The following officers were elected for the season:—

Captain: Miss J. Swallow.

Vice-Captain: Miss A. Woolf.

Hon. Secretary: Miss J. Chambers.

Hon. Match Secretary: Miss J. Chambers.

Treasurer: Miss G. Barraclough.

Committee Members: Miss A. Tresidder.

Professor A. Wormald kindly consented to remain the Club's President for a further year, with Mr. B. Hume and Mrs. F. Woolf as Vice-Presidents. Colours were awarded to Miss B. Barnard, Miss J. Chambers and Miss A. Woolf.

1st XI v. Middlesex Hospital. Won 5-1.

1st XI v. University College Oxford 2nd XI. Lost 4-5.

The men once again proved their supremacy in speed and power, though in precision of stick work and accuracy of shooting the Bart's XI excelled. This was a most enjoyable game played at high speed and luckily one in which no bones were broken.

1st XI v. Wimbledon. Drawn 6-6.

Bart's went off to a flying start and were soon two goals up. Wimbledon's defence however was very strong and by half-time they had drawn level at three all. In the second half Bart's scored two quick goals, but Wimbledon retaliated and eventually went ahead at 6-5. Just before time Bart's began to play with added zest and scored a further goal.

CAMBRIDGE TOUR

1st XI v. Magdalene. Drawn 3-3.

Considering that this game was played on a rugby pitch against eleven rugby players, it must be said that Bart's did well to draw. This match gave Miss I. Tonkins an opportunity to show her prowess as a goalkeeper by making some magnificent saves. Despite the size of the pitch, Bart's stood the pace until the final whistle.

1st XI v. Girton. Won 18-1.

As the result suggests, this match was a little one-sided and comment is therefore difficult. Miss J. Chambers set up a goal-scoring record, scoring 10 of the 18 goals.



Psyche-cum-soma

Cupid, you will remember, deserted Psyche; and I occasionally wonder whether it was not so much because she asked awkward questions as because he discovered that she was one of a pair of Siamese twins. For though it was easy enough for Cupid to leave Psyche, Psyche, poor girl, can never leave Soma. Yet to their Siamese twinship—the twinship of mind and body—we are often, like Cupid, blind.

Of course in one sense, we know quite well that our minds are constantly influencing our bodies. Suppose I ask you to think of a lemon—to remember how it smells, how it feels when you cut it with a sharp knife, and what it tastes like when you let your teeth sink into it, as we used to do at halftime. Unless you are unusually weak on imagination your mouth will water. But not because I have in fact handed you . . .

Fascinating, but owing to a shortage of space, unfinished. The complete essay, which appeared originally in The Times, is one of a collection of meditations by this celebrated medical essayist. We will be delighted to send you a copy of "The Prosings of Podalirius". Just send a card to the address below.

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Is it any use as medicine?"
Said my favourite pharmacist,
"Do you think we should include it
In the therapeutic list?"

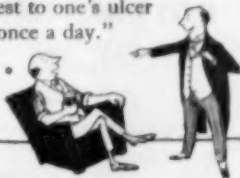


My well considered answer was,
"There isn't any doubt,
There's nothing like a Guinness
To make one's heart feel stout.
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Or mend a broken arm,
But it titillates the appetite
And never does you harm.



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Restores his muscle tone,
Inflates the rabbit's ego,
Increases blood and bone,
Alleviates depression
Insomnia melts away,
It's kindest to one's ulcer
If taken once a day."

M.B., Ch.B.

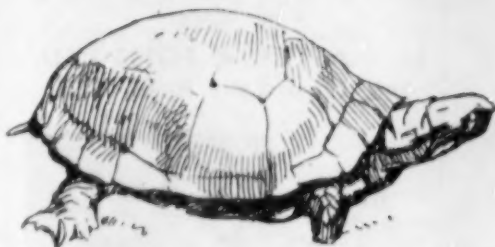


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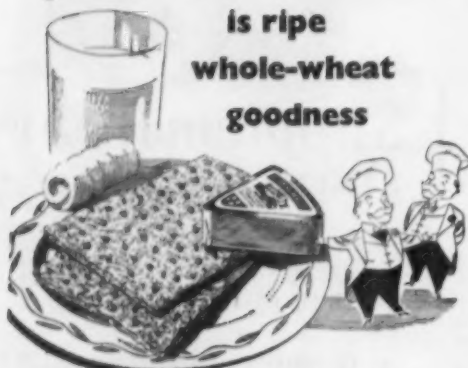


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